

REMARKS

A restriction has been made under 35 U.S.C. 121 to one of the following inventions:

- I. Claims 1 to 13, drawn to a waterproofing membrane; and
- II. Claims 14 to 24, drawn to a method of making a waterproofing membrane.

Applicant hereby elects to prosecute the invention of Group I (claims 1 to 13). This election is made without traverse.

Claims 1 to 3, 6 to 9, 12, and 13 have been rejected under 35 U.S.C. 102(b) as being anticipated by Sylvia (US Patent No. 3,581,779). Claims 2, 3, 8, 9, 12, and 13 have been canceled. Claims 1, 6, and 7 still remain under consideration.

Sylvia discloses a lightweight flexible roofing laminate that has an opaque polyvinyl fluoride film bonded to a water-resistant, resilient, flexible backing material (such as an asphalt-saturated felt, asphalt-impregnated nonwoven fiberglass mat, asphalt-saturated rag felt, neoprene-impregnated asbestos felt, rubber sheeting or the like) by an adhesive (such as butadiene-acrylonitrile copolymer adhesive). The film contains titanium dioxide and may be white or light colored. The adhesive is applied to a surface of the film and a surface of backing material prior to bringing the film and backing material together between nip rolls.

The invention as set forth in claim 1 and the claims depending therefrom is a roll of prefabricated asphalt-based waterproof roofing membrane that consists essentially of: an asphalt saturated reinforcing substrate; a highly reflective non-asphalt based elastomeric coating layer; a polymer primer layer intermediate and bonded directly to a top surface of the top asphalt layer and a bottom surface of the highly reflective non-asphalt based elastomeric coating layer; and a release sheet. The asphalt saturated

reinforcing substrate has a top asphalt layer overlaying and coextensive with a top major surface of the asphalt saturated reinforcing substrate and a bottom asphalt layer overlaying and coextensive with the bottom major surface of the asphalt saturated reinforcing substrate. The highly reflective non-asphalt based elastomeric coating layer consists essentially of a polymer binder material selected from a group consisting of acrylic-based elastomers and isocyanate-based elastomers, and a reflective pigment. The highly reflective non-asphalt based elastomeric coating layer has a top surface forming a top surface of the prefabricated asphalt-based waterproof roofing membrane that has an initial solar reflectance of at least 0.65 and a solar reflectance of at least 0.50 after three years. The polymer primer layer is intermediate and bonded directly to a top surface of the top asphalt layer and a bottom surface of the highly reflective non-asphalt based elastomeric coating layer, is impermeable to oils and other colored components of the top asphalt layer, and keeps the oils and other colored components of the top asphalt layer from exuding into the highly reflective non-asphalt based elastomeric coating layer and reducing the reflectance of the highly reflective non-asphalt based elastomeric coating layer. The release sheet is on the top major surface or the bottom major surface of the prefabricated asphalt-based waterproof roofing membrane; is separable from the prefabricated asphalt-based waterproof roofing membrane; permits the prefabricated asphalt-based waterproof roofing membrane to be wound into the roll for packaging, storage, shipping, and handling without the bottom major surface of the asphalt saturated reinforcing substrate adhering to or discoloring the top surface of the highly reflective non-asphalt based elastomeric coating layer; and permits the prefabricated asphalt-based roofing membrane to be unwound from the roll for installation.

Sylvia does not disclose or suggest a prefabricated asphalt-based roofing membrane wherein the membrane has: a highly reflective non-asphalt based

elastomeric coating layer that is a polymer binder material selected from a group consisting essentially of acrylic-based elastomers and isocyanate-based elastomers and a reflective pigment; a polymer primer layer, intermediate and bonded directly to a top surface of the top asphalt layer and a bottom surface of the highly reflective non-asphalt based elastomeric coating layer, that is impermeable to oils and other colored components of the top asphalt layer and keeps the oils and other colored components of the top asphalt layer from exuding into the highly reflective non-asphalt based elastomeric coating layer and reducing the reflectance of the highly reflective non-asphalt based elastomeric coating layer; and a release sheet that permits the prefabricated asphalt-based waterproof roofing membrane to be wound into the roll for packaging, storage, shipping, and handling without the bottom major surface of the asphalt saturated reinforcing substrate adhering to or discoloring the top surface of the highly reflective non-asphalt based elastomeric coating layer and permits the prefabricated asphalt-based roofing membrane to be unwound from the roll for installation. The top layer of the roofing laminate of Sylvia is a pigmented polyvinyl fluoride film. There is no indication in Sylvia that the adhesive of that laminate forms a barrier between the asphalt-impregnated nonwoven mat and the polyvinyl fluoride film to keep oils and other colored components of the asphalt from exuding into and discoloring or degrading the polyvinyl fluoride film. The laminate of Sylvia does not include a release sheet that permits the membrane to be wound into a roll without the bottom surface of the asphalt-impregnated nonwoven mat adhering to or discoloring the top surface of the polyvinyl fluoride film. In view of the amendments to claim 1 and for the reasons set forth above, the withdrawal of the rejection of claims 1, 6, and 7 as being anticipated by Sylvia is requested and the allowance of claims 1, 6, and 7 is solicited.

Claims 1 to 3, 5 to 9, and 11 to 13 have been rejected under 35 U.S.C. 102(e) as being anticipated by Zanchetta et al (US Patent Application No. 2004/0009319). Claims

2, 3, 5, 8, 9, 11, 12, and 13 have been canceled. Claims 1, 6, and 7 still remain under consideration.

Zanchetta et al discloses a highly reflective and emissive roofing membrane composite that includes a composite sheet 1 having a top asphaltic coating layer 3, a reinforcing carrier 2, and a bottom asphaltic coating layer 4 and a specially engineered surface laminate 9 (shown in Figures 2 and 3) that is bonded directly to the asphaltic coating layer 3 of the composite sheet 1. The specially engineered surface laminate 9 of Figure 2 includes a polyolefinic fabric 12, a polyolefinic sheet 15, and an adhesive 13 that bonds the fabric and sheet together. The specially engineered surface laminate 9 of Figure 3 includes a polyolefinic fabric 18, aluminum foil 20, and a polyolefinic sheet 22 bonded together with an adhesive. “The present invention offers a product with a factory-applied surface laminate that meets the requirements of high reflectivity and high emissivity without the drawbacks associated with the usage of coatings to provide a cooler surface.” (page 4, paragraph 0016, first sentence)

The invention as set forth in claim 1 and the claims depending therefrom is a roll of prefabricated asphalt-based waterproof roofing membrane that consists essentially of: an asphalt saturated reinforcing substrate; a highly reflective non-asphalt based elastomeric coating layer; a polymer primer layer intermediate and bonded directly to a top surface of the top asphalt layer and a bottom surface of the highly reflective non-asphalt based elastomeric coating layer; and a release sheet. The asphalt saturated reinforcing substrate has a top asphalt layer overlaying and coextensive with a top major surface of the asphalt saturated reinforcing substrate and a bottom asphalt layer overlaying and coextensive with the bottom major surface of the asphalt saturated reinforcing substrate. The highly reflective non-asphalt based elastomeric coating layer consists essentially of a polymer binder material selected from a group consisting of acrylic-based elastomers and isocyanate-based elastomers, and a reflective pigment.

The highly reflective non-asphalt based elastomeric coating layer has a top surface forming a top surface of the prefabricated asphalt-based waterproof roofing membrane that has an initial solar reflectance of at least 0.65 and a solar reflectance of at least 0.50 after three years. The polymer primer layer is intermediate and bonded directly to a top surface of the top asphalt layer and a bottom surface of the highly reflective non-asphalt based elastomeric coating layer, is impermeable to oils and other colored components of the top asphalt layer, and keeps the oils and other colored components of the top asphalt layer from exuding into the highly reflective non-asphalt based elastomeric coating layer and reducing the reflectance of the highly reflective non-asphalt based elastomeric coating layer. The release sheet is on the top major surface or the bottom major surface of the prefabricated asphalt-based waterproof roofing membrane; is separable from the prefabricated asphalt-based waterproof roofing membrane; permits the prefabricated asphalt-based waterproof roofing membrane to be wound into the roll for packaging, storage, shipping, and handling without the bottom major surface of the asphalt saturated reinforcing substrate adhering to or discoloring the top surface of the highly reflective non-asphalt based elastomeric coating layer; and permits the prefabricated asphalt-based roofing membrane to be unwound from the roll for installation.

Zanchetta et al do not disclose or suggest a prefabricated asphalt-based roofing membrane wherein the membrane consists essentially of: a highly reflective non-asphalt based elastomeric coating layer that consists essentially of a polymer binder material selected from a group consisting of acrylic-based elastomers and isocyanate-based elastomers and a reflective pigment; a polymer primer layer, intermediate and bonded directly to a top surface of the top asphalt layer and a bottom surface of the highly reflective non-asphalt based elastomeric coating layer, that is impermeable to oils and other colored components of the top asphalt layer and keeps the oils and other colored

components of the top asphalt layer from exuding into the highly reflective non-asphalt based elastomeric coating layer and reducing the reflectance of the highly reflective non-asphalt based elastomeric coating layer; and a release sheet that permits the prefabricated asphalt-based waterproof roofing membrane to be wound into the roll for packaging, storage, shipping, and handling without the bottom major surface of the asphalt saturated reinforcing substrate adhering to or discoloring the top surface of the highly reflective non-asphalt based elastomeric coating layer and permits the prefabricated asphalt-based roofing membrane to be unwound from the roll for installation.

In fact, Zanchetta et al, aware of the problems associated with the exudation of oil from bitumen and the discoloration due to such exudation, teaches away from using only a pigment containing coating layer to form a highly reflective surface on a asphalt-based roofing membrane and proposes the usage of a specially engineered surface laminate as a solution to the “drawbacks associated with the usage of coatings” to form reflective surfaces on asphalt-based roofing membranes. More specifically, Zanchetta et al teaches the utilization of a specifically engineered surface laminate on their roofing membrane that in Figure 2 includes a polyolefinic fabric 12, a polyolefinic sheet 15, and an adhesive 13 that bonds the fabric and sheet together and in Figure 3 includes a polyolefinic fabric 18, aluminum foil 20, and a polyolefinic sheet 22 bonded together with an adhesive. There is no indication in Zanchetta et al that the adhesive rather than the fabric of the specially engineered surface laminate of Zanchetta et al functions as a barrier to oils exuding from the bitumen of the membrane. The prefabricated asphalt-based waterproof roofing membrane of the subject invention provides a much less expensive, very different, uncomplicated solution to the problems of the prior art associated with the use of reflective coating layers on prefabricated roofing membranes. As set forth in claim 1 and the claims depending therefrom, the highly reflective top

surface of the prefabricated asphalt-based waterproof roofing membrane of the subject invention is required to consist essentially of a coating layer of a binder material and a reflective pigment and this highly reflective coating layer is used in combination with and is protected from the bitumen of the asphalt saturated reinforcing substrate by a polymer primer layer that is impermeable to the oils and other colored components of the bitumen and bonded directly to the bitumen and the reflective coating layer. In view of the amendments to claim 1 and for the reasons set forth above, the withdrawal of the rejection of claims 1, 6, and 7 as being anticipated by Zanchetta et al is requested and the allowance of claims 1, 6, and 7 is solicited.

Claims 5 and 11 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Sylvia in view of Stierli (US Patent No. 4,442,148). Claims 5 and 11 have been canceled. However, in view of the amendments to claim 1, this rejection will be discussed in connection with claim 1.

Sylvia discloses a lightweight flexible roofing laminate that has an opaque polyvinyl fluoride film bonded to a water-resistant, resilient, flexible backing material (such as an asphalt-saturated felt, asphalt-impregnated nonwoven fiberglass mat, asphalt-saturated rag felt, neoprene-impregnated asbestos felt, rubber sheeting or the like) by an adhesive (such as butadiene-acrylonitrile copolymer adhesive). The film contains titanium dioxide and may be white or light colored. The adhesive is applied to a surface of the film and a surface of backing material prior to bringing the film and backing material together between nip rolls.

Stierli discloses a waterproofing laminate that has a self-adhesive oil-containing bituminous layer adhered to a support sheet and a release liner 4.

Sylvia does not disclose or suggest a prefabricated asphalt-based roofing membrane wherein the membrane has a highly reflective non-asphalt based elastomeric coating layer is a polymer binder material selected from a group consisting essentially of

acrylic-based elastomers and isocyanate-based elastomers and a reflective pigment; a polymer primer layer, intermediate and bonded directly to a top surface of the top asphalt layer and a bottom surface of the highly reflective non-asphalt based elastomeric coating layer, that is impermeable to oils and other colored components of the top asphalt layer and keeps the oils and other colored components of the top asphalt layer from exuding into the highly reflective non-asphalt based elastomeric coating layer and reducing the reflectance of the highly reflective non-asphalt based elastomeric coating layer; and a release sheet that permits the prefabricated asphalt-based waterproof roofing membrane to be wound into the roll for packaging, storage, shipping, and handling without the bottom major surface of the asphalt saturated reinforcing substrate adhering to or discoloring the top surface of the highly reflective non-asphalt based elastomeric coating layer and permits the prefabricated asphalt-based roofing membrane to be unwound from the roll for installation. Even if a release liner such as the release liner of Stierli is used with the roofing laminate of Sylvia, Sylvia and Stierli do not disclose or suggest a prefabricated asphalt-based waterproof roofing membrane such as that of the subject invention having a highly reflective non-asphalt based coating layer forming the top layer of the membrane that consists essentially of a polymer binder material selected from a group consisting of acrylic-based elastomers and isocyanate-based elastomers and a reflective pigment and that is protected from oils and other colored components of the asphalt saturated reinforcing substrate by an impermeable polymer primer layer so that the reflectance of the highly reflective layer is not reduced. The prefabricated asphalt-based waterproof roofing membrane of the subject invention, as set forth in claim 1 and the claims depending therefrom, includes a highly reflective non-asphalt based coating layer that consists essentially of a polymer binder material selected from a group consisting of acrylic-based elastomers and isocyanate-based elastomers and a reflective pigment in combination with an oil and other colored

component impermeable polymer primer layer that protects the reflectance of the highly reflective coating layer from the oils and other colored components of the asphalt saturated reinforcing substrate. The polymer binder materials set forth in claim 1 for use in the coating layer are selected, in part, for their fast curing times to facilitate the fabrication of the prefabricated asphalt-based waterproof roofing membrane of the subject invention in line at conventional production speeds. Neither Sylvia nor Stierli suggest the use of such a highly reflective coating layer in combination with a oil impermeable polymer primer layer that keeps oils and other colored components of the asphalt saturated reinforcing substrate from reducing the reflectance of the highly reflective coating layer. In view of the amendments to claim 1 and for the reasons set forth above, the allowance of claims 1, 6, and 7 over Sylvia and Stierli is solicited.

Claims 4 and 10 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Sylvia in view of Hart (US Patent No. 4,870,796). Claims 5 and 11 have been canceled. However, in view of the amendments to claim 1, this rejection will be discussed in connection with claim 1.

Sylvia discloses a lightweight flexible roofing laminate that has an opaque polyvinyl fluoride film bonded to a water-resistant, resilient, flexible backing material (such as an asphalt-saturated felt, asphalt-impregnated nonwoven fiberglass mat, asphalt-saturated rag felt, neoprene-impregnated asbestos felt, rubber sheeting or the like) by an adhesive (such as butadiene-acrylonitrile copolymer adhesive). The film contains titanium dioxide and may be white or light colored. The adhesive is applied to a surface of the film and a surface of backing material prior to bringing the film and backing material together between nip rolls.

Hart discloses a weatherproof roofing membrane and a method of constructing the membrane in place on the roof. A layer of roofing felt 16 is laid on the roof 14, extensible reinforcing fabric 20 is laid over the felt 16, fasteners 24 are installed, a starve

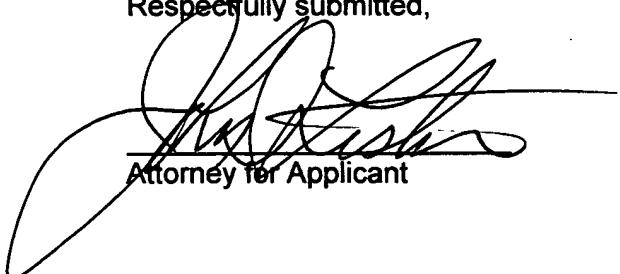
coat 30 of elastomeric polymer (such as acrylic latex, asphaltic latex, coal tar latex, rubber modified latex and acrylic resins) is applied to the fabric layer 20, a full coat 32 of elastomeric polymer is applied over the fabric layer, a second fabric layer 34 is applied over the full coat 32, a second full coat 38 of elastomeric polymer is applied over the fabric layer 34, and a final finish coat 40 of elastomeric polymer is applied. Hart describes a roofing system that is fabricated in place and is the type of roofing system to be replaced by the use of the prefabricated asphalt-based waterproof roofing membrane of the subject invention which eliminates the need for the repetitive coating steps used by Hart in the formation of his roofing system. Hart lists a number of elastomeric polymers (such as acrylic latex, asphaltic latex, coal tar latex, rubber modified latex and acrylic resins) that can be used in his method of fabricating a roofing system in place which include acrylic latex. However, even though such elastomeric polymers have been used in the industry for well over a decade to form roofing systems in place by coating fabric layers laid down on a roof, there is no use of such elastomeric polymers on prefabricated asphalt-based waterproof roofing membranes to form highly reflective top coating layer on such prefabricated roofing membranes and greatly reduce the labor and time to make a roofing system and simplify the process of making a roofing system. Neither Sylvia nor Hart disclose or suggest the use of such an elastomeric polymer for the top layer of a prefabricated asphalt-based waterproof roofing membrane or the use of such a coating layer in combination with an oil and other colored component impermeable polymer primer layer that protects the coating layer from a reduction in reflectance due to the exudation of oils from an asphalt saturated reinforcing layer into the coating layer. In view of the amendments to claim 1 and for the reasons set forth above, the allowance of claims 1, 6, and 7 over Sylvia and Hart is solicited.

The allowance of newly submitted claim 25 is also solicited. This claim further defines a preferred elastomeric polymer for the highly reflective top coating layer of the

prefabricated roofing membrane of the subject invention that has an extremely fast reaction kinetics and cure and exhibits very goof durability.

Claims 1 to 13 have been provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1 to 13 of copending Application No. 10/659,002. The claims of this application and copending application no. 10/659,002 have both been amended so that the claims are not coextensive. For example, claim 1 of the subject application, as now amended, requires the top layer of the prefabricated asphalt-based roofing membrane of that invention to be a coating layer consisting essentially of a polymer binder material selected from a group consisting essentially of acrylic-based elastomers and isocyanate-based elastomers and a reflective pigment and claim 1 of copending application no. 10/659,002 requires the top layer of the prefabricated asphalt-based waterproof roofing membrane to be a preformed sheet layer consisting essentially of a polyvinyl chloride material and a reflective pigment. In view of these amendments the withdrawal of the rejection of the claims remaining under consideration under 35 U.S.C. 101 is solicited.

Respectfully submitted,



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